Syllabus of STAT 310

STAT 310 = ECON 307

Prerequisite: MATH 102

Logistics

Since the class is large,

- We do not keep track of attendance—you are encouraged, but not required to attend.
- If you do not attend, you do not need to inform us—you can find the slides of lectures and homework assignments on OWL-Space, and you can submit your homework there.
- If you cannot submit your homework on time, you do not need to inform us—late homework will be graded as 0, but the lowest two homework grades will be dropped.
- It is important to direct questions to the designated persons:
  - Questions concerning lectures: contact instructor.
  - Questions concerning homework: contact teaching assistants.
  - Questions concerning homework grades: contact head teaching assistant.

  We will not answer questions which are not directed to the designated persons.
- Please do not email questions, but post them on https://piazza.com/rice/fall2014/stat310/home, so that all benefit from questions and answers.

Meeting dates

Dates: Tuesday and Thursday, August 26—December 4 with the exception of

— Tuesday, October 14: Midterm Recess

— Thursday, November 27: Thanksgiving Holiday

Final exam period: December 10—17

Contact

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- Please do not email questions, but post them on https://piazza.com/rice/fall2014/stat310/home, so that all benefit from questions and answers.

Instructor: lectures:

Name: Dr. Michael Schweinberger

Office: Duncan Hall 2058

Office hours: Thursday 4:00–6:00

Email: michael.schweinberger@rice.edu

Head teaching assistant: homeworks and homework grades:

Name: Yulia Baker

Office: Duncan Hall 2077

Office hours: Monday 5:00–7:00

Email: Yulia.Baker@rice.edu

Teaching assistant: homeworks:

Name: Steve Wilson

Office: Duncan Hall DCH 2014

Office hours: Tuesday 5:00–7:00

Email: two@rice.edu

Teaching assistant: homeworks:

Name: Julia Schedler

Office: Duncan Hall DCH 2014

Office hours: Wednesday 5:00–7:00

Email: Julia.Schedler@rice.edu

Expected learning outcomes

STAT 310 is a calculus-based introduction to mathematical statistics. Students will learn the core ideas of probability and statistics, with an emphasis on calculus-based probability, properties of point estimators and methods of point estimation, interval estimation, hypothesis testing, and linear models.

Contents

The following books cover the same ground as the class and are recommended as backgound reading. Select one of the two books:

- K. M. Ramachandran and C. P. Tsokos (2009). Mathematical Statistics with Applications. Academic Press. Chapters 1–10 plus.
- R. V. Hogg and E. A. Tanis (2010). Probability and Statistical Inference. Prentice Hall. Chapters 1–7 plus.

Topics include, but are not limited to:

- Descriptive statistics
- Probability
- Probability distributions, including exponential families of distributions
- Expectation, variance, covariance, correlation
- Probability bounds: concentration inequalities
- Law of Large Numbers and Central Limit Theorem
- Point estimation (e.g., maximum likelihood estimation), including properties of point estimators (e.g., sufficiency, consistency, efficiency)
- Point estimation with incomplete data given incomplete data with likelihood-ignorable incomplete-data mechanisms
- Interval estimation
- Hypothesis testing
- Linear regression
- Logistic regression

- Analysis of variance

Grades

20% Homeworks

25% Midterm exam I

25% Midterm exam II

30% Final exam

Homeworks

- Homework will be announced on OWL-Space and must be submitted through OWL-Space. The electronic document must be submitted in the platform-independent PDF format.
- If you complete your homework by paper and pencil, scan it and submit it through OWL-Space.
- Late homework will not be accepted and graded as 0.
- You may discuss homework problems with others, but must completed your homework on your own.
- The lowest two homework grades will be dropped.

Exams

- Midterm exam I: Thursday, October 2 (in class, closed book, two double-sided A4 pages of notes, calculator)
- Midterm exam II: Thursday, November 6 (in class, closed book, two double-sided A4 pages of notes, calculator)
- Final exam: To be announced by the Office of the Registrar by the end of September (in class, closed book, three double-sided A4 pages of notes, calculator)

If you have a conflict, contact the instructor and provide proof of conflict. If the conflict is foreseeable, provide proof of conflict at least five business days before the exam. Otherwise, provide proof of conflict within two business days of the exam. If proof of conflict is provided on time and the conflict is legitimate, a make-up exam may be arranged.

Disabilities

If you have a documented disability that will impact your work in class, please contact the instructor. In addition, you will need to register with Disability Support Services Office in the Allen Center. The policy of Rice University regarding disabilities are observed: see http://ga.rice.edu/.

Honor Code

The Honor Code of Rice University is observed. All violations of the Honor Code of Rice University (e.g., violations of copyright, cheating) will be reported to the Honor Council of Rice University.

Other policies

All other policies of Rice University are observed: see http://ga.rice.edu/.